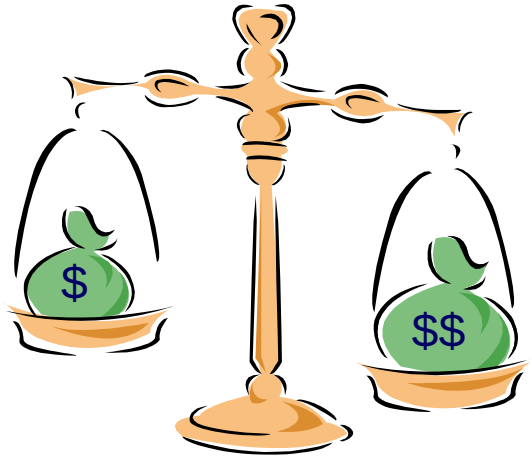
Does Sustainable Design Cost More?



Recent Studies that Address the Question of Cost

- California study of 33 LEED Buildings, October, 2003:
  - "The Costs and Financial Benefits of Green Buildings"
    A Report to California's Sustainable Building Task Force
- FEMP study, October, 2003
  - "The Business Case for Sustainable Design in Federal Facilities"
- October 2003 USGBC GreenBuild Conference
  - "Defining LEED Costs for the USGSA"
  - "Managing the Cost of LEED"
- November 2003: Retroactive cost analysis for 3 Fermilab projects
- Ongoing Green Building List Serve Topic

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Challenges to Costing

- Many green buildings are one-time “showcase” projects
- There’s a learning curve cost for the first green building
  - Of a client
  - Of a design/architectural firm
- Relative newness of technologies and products can lead to over-sizing of systems or limited use of products, losing full cost benefits
- Estimators may add uncertainty factors for new technologies they are not familiar with

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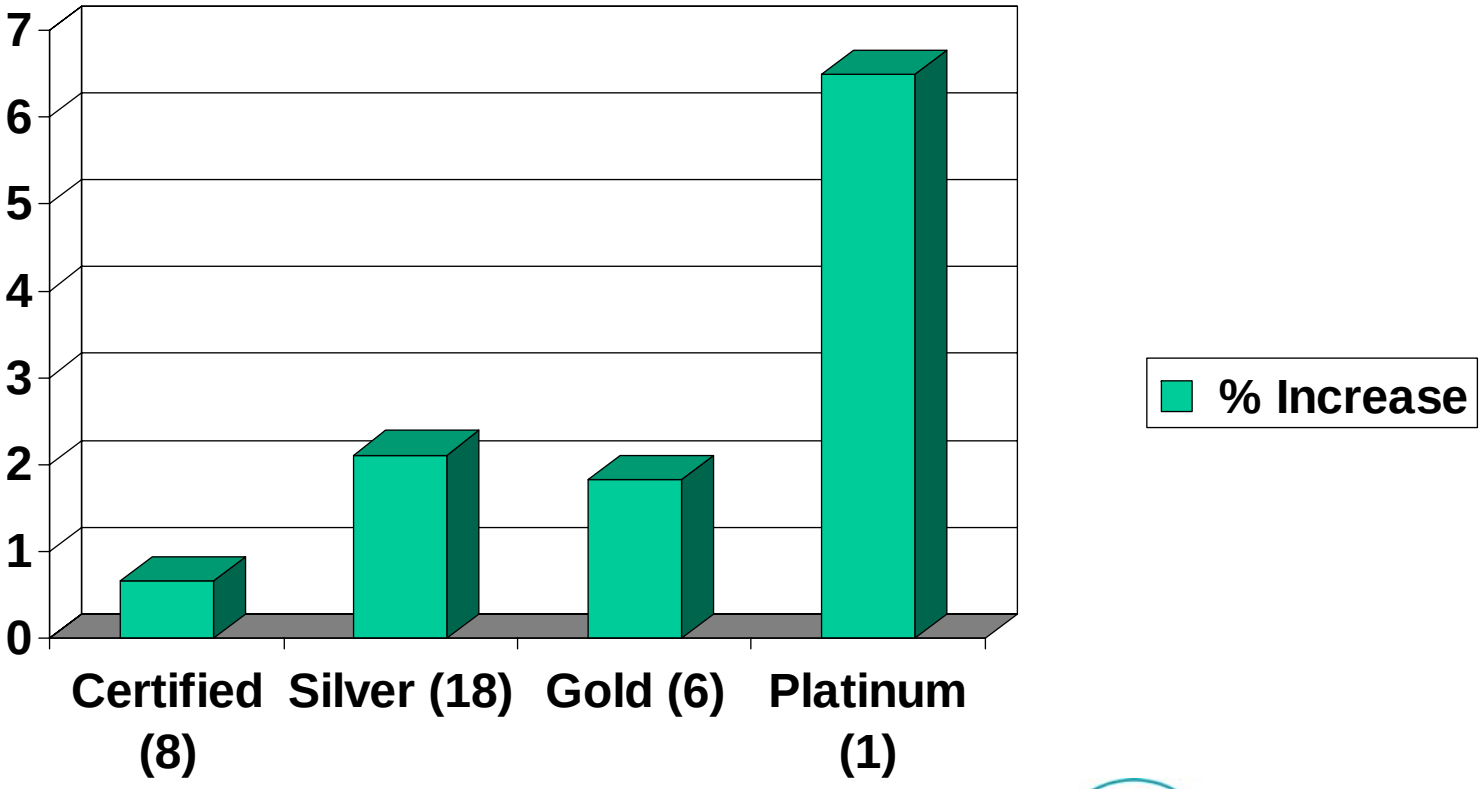
Average Cost Premium vs. Level of Certification



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Evidence of the Learning Curve

- Portland's 3 LEED Silver Buildings
  - 1995: 2% premium
  - 1997: 1% premium
  - 2000: 0% premium

- City of Seattle
  - Program onset (several years ago): 3-4% premium
  - Today: 1-2% premium

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“Silver for Free” if…

- LEED Silver is required in the RFQ for the design team and embedded within construction documents, building construction, and commissioning;
- Design Team has sustainable design embedded within their culture
- Contractors, Property Managers, Real Estate Analysts, Budget Analysist, Crew Chiefs and Custodians are included on the Design Team.
- Selected strategies are “whole system” in nature and integrated design solutions are pursued that cannot be peeled off from the base project as “add alternates”.

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Costs are Reasonable When You Consider…

- Life cycle costs are below conventional buildings (2% first cost yields 20% life cycle savings)
- Better design reduces change orders
- Advanced energy efficiency for pennies per square foot
- On average, green buildings use 30% less energy than conventional buildings

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FEMP Highlights

www.eere.energy.gov/femp/techassist/sustainability.html#business

Beyond first costs to Life Cycle Costs:

- Decreased energy and water costs
- Lower maintenance and repair costs
- Reduced absenteeism and increased productivity
- Increased building valuation
- Health, comfort and well-being of occupants
- Building safety and security, decreased insurance rates
- Lower air emissions
- Reduced solid waste generation
- Decrease natural resource use

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Common Cost Inflators

- Lack of a clear green design goal
- Mid-stream attempts to incorporate green
- Decentralized management of the process
- Lack of experience with LEED
- Insufficient Time/Money

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Managing the Costs

Don't even think of LEED unless…

- You have support from senior decision makers
- LEED can be started during conceptual design
- The project scope is significant, including systems and finishes
- The project can meet all of the prerequisites

LEED Documentation Costs…

- As low as $10,000 for an experienced team
- Most first-timers report costs of $30,000 - $60,000

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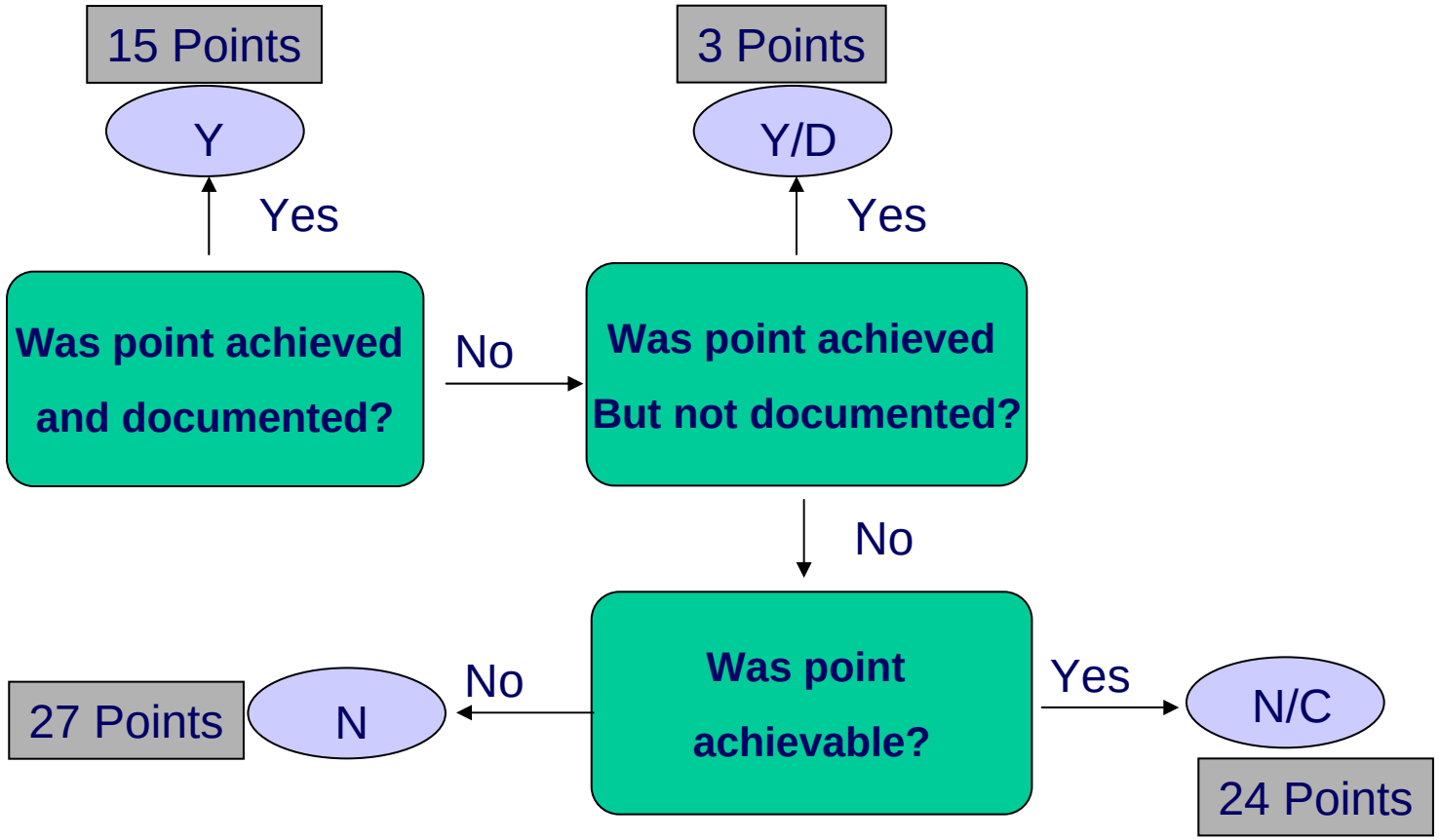
APPLICATION OF LEED™ PRINCIPLES

to ANL & Fermilab Buildings

Cost Analysis for Lab-BEG

Approach


15 Points
Y
Yes
3 Points
Y/D
Yes
Was point achieved and documented?
No
Was point achieved But not documented?
No
Was point achievable?
No
27 Points
N
Yes
N/C
24 Points

Costing Methods/Assumptions

- Feasibility-level cost estimates
  - Supplier quotes
  - Central Supply Facility Experience
- For each item costed, we considered:
  - Capital
  - Fermilab staff (@$75/hour)
  - A/E hours (@$75/hour)
  - Commissioning costs (@$75/hour)
  - LEED documentation costs (@$75/hour)
  - Lab Tax (@19%)

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Revised Score - Prerequisites

Starting Score: 15 **Ending Score: 32**

Prerequisite	Recommendation	Cost	Revised Score
EA 1	Add'l documentation for bldg cx	$ 9,890	Yes
MR 1	Add glass to recycling service	$0	Yes

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Revised Score – SS/WE/EA Credits

Starting Score: 15

Ending Score: 32

Credit	Recommendation	Cost	Revised Score
SS 4.2	Add bike rack, convert showers	$ 2,266	1
SS 4.4	Stripping and signage	$ 460	1
SS 5.2	Add 350 ft2 to contractor's area	$ 0	1
SS 7.2	Galvalume Energy Star roof	($15,000)	1
SS 8	Add shielding, change spacing	$ 2,760	1
WE 2	Piping sinks to stormwater line	$ 2,760	1
WE 3.1	See WE 3.2	$ 0	1
WE 3.2	Waterless urinals, low flow faucets	$ 1,600	1
EA 1.1	Inhouse DOE2 modeling	$ 2,463	2

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Revised Score – MR/IEQ/ID Credits

Starting Score: 15 **Ending Score: 32**

Credit	Recommendation	Cost	Revised Score
MR 2.1	Develop/add Waste Mmgt plan, calcs	$ 2,463	1
MR 4.1	Add 25% Recycled Content to project	$ 1,265	1
MR 5.1	Add 25% Recycled Content to project	$ 1,265	1
MR 5.1	See MR 5.1.	$ 0	1
IEQ 7.2	Add rh sensor to control system	$ 2,053	1
ID 1.2	Increase local mat'ls to 40%	$ 1,265	1
ID 1.4	Show 29% downsize in scope	$ 0	1

TOTALS	**$15,510**	**32**

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